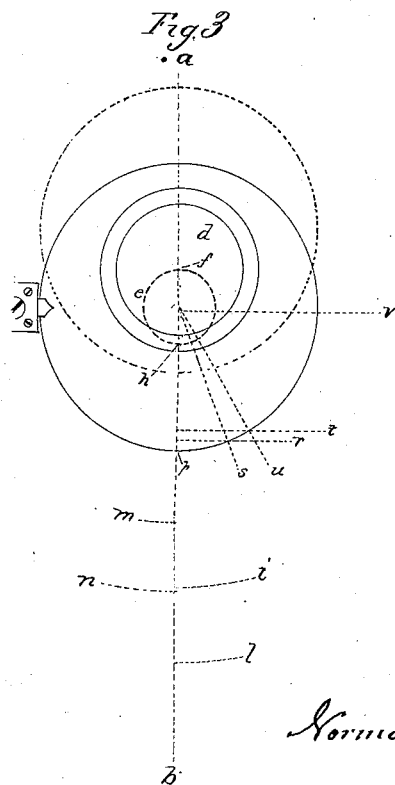
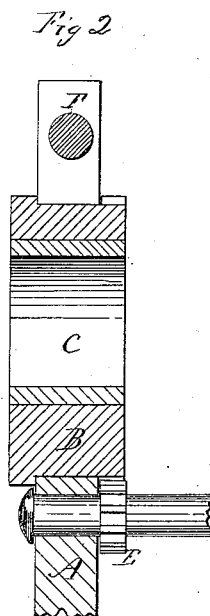
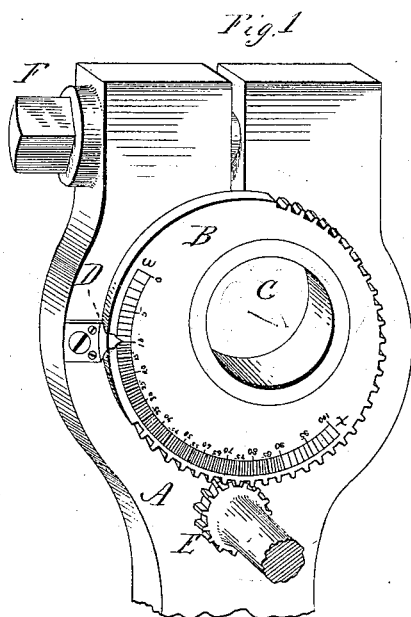


(No Model.)

N. C. STILES.  
MECHANICAL ADJUSTMENT.

No. 306,972.

Patented Oct. 21, 1884.



Witnesses:  
*J. H. Shumway*  
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# UNITED STATES PATENT OFFICE.

NORMAN C. STILES, OF MIDDLETOWN, CONNECTICUT.

## MECHANICAL ADJUSTMENT.

SPECIFICATION forming part of Letters Patent No. 306,972, dated October 21, 1884.

Application filed September 22, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, NORMAN C. STILES, of Middletown, in the county of Middlesex and State of Connecticut, have invented a new Improvement in Mechanical Adjustments; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view showing the graduated eccentric disk and pointer fixed on the pitman; Fig. 2, a vertical central section of the same; Fig. 3, a diagram illustrating the operation of the invention.

This invention relates to a device for adjusting a crank movement, whereby the extreme point to which the crank will throw the pitman may be varied. If the pitman be inadjustably attached to the crank, the throw of the pitman will be the same at both extremes; but by arranging a disk in the pitman having an eccentric bearing formed therein to receive the crank-pin, the adjustment of that eccentric to different positions will vary the extreme points to which the pitman will be thrown, but without varying the extent of throw. To illustrate: Let the line *a b*, Fig. 3, represent the central line of the pitman through the crank-pin, *d* the crank-pin, and the circle *e* the throw of the crank. The extent of the throw of the crank is therefore from the center *f* to the opposite point, *h*. Let *i* represent the end of the pitman at one extreme of the throw, and the line *l* the other extreme. In the rotation of the crank the movement of the thing to which the pitman is attached will be as from *i* to *l*, and if the crank be inadjustably fixed in the pitman, then these two extreme points cannot be changed.

To make the extreme points of the throw of the crank adjustable, so that the thing moved may stop short of its extreme point *l*, but without changing the throw of the crank, an eccentric bearing has been arranged in the head of the pitman for the crank-pin, as seen in Figs. 1 and 2, A representing the pitman, and B a disk arranged in the head of the pitman, having a hole, C, through it parallel with its axis, but in an eccentric position with relation to the periphery of the disk B. This hole or

opening C receives the crank-pin, and if the disk be held rigid in the head of the pitman the throw of the crank will be accordingly; but by turning the disk in the head of the pitman the extreme points to which the pitman will reach are varied—say standing, as seen in Fig. 3, the eccentric arranged with its shorter diameter upward, the extreme points will be as from *i* to *l*; but if, with the crank-pin still standing in this position, the eccentric be turned in the head of the pitman to the other extreme, as indicated in broken lines, then the pitman will have been drawn upward, so that the extreme throws will be as to the lines *m n*, and the thing moved by the pitman, instead of being moved as from *i* to *l* in the first position, will be moved as from *m* to *n*, the throw or distance moved being the same, the extreme points only varied. The extreme variation is easily determined by setting the eccentric at either of the said extreme positions, and as seen in Fig. 3; but any variation of the throw other than this extreme, under the usual arrangement, can only be determined by trial, as in turning the eccentric from either extreme the change of position of the pitman is very slow, gradually increasing until the quarter-point or intermediate position is reached—that is to say, for illustration, as the point *p* on the eccentric is turned, say, to the right to produce a variation to the extent indicated by the line *r*, the point *p* must be turned to the line *s*; but the same extent of adjustment from the line *s* as to the line *t* is made by a less movement of the eccentric, as indicated by the line *u*, and the movement of the eccentric to produce a change of equal extent decreases to the quarter-point *v*.

The object of my invention is to provide some means whereby the operator may know to what extent he is adjusting the pitman, or, rather, knowing that a certain amount of adjustment is required, he may understandingly adjust his pitman without the usual trials.

To this end my invention consists in combining with the eccentric and pitman-head a graduated scale on one and a pointer on the other, the said scale graduated to indicate the decreasing movement of the eccentric from one extreme toward the quarter-point, and the increasing movement of the eccentric from that quarter-point to the other extreme to pro-

duce a constant variation in the extreme movement of the pitman, all as more fully herein-after described.

My invention is best applied, as seen in Fig. 1, by a graduated scale on the face of the eccentric disk and near its outer edge, combined with a fixed point, D, on the pitman-head. The divisions on this scale should extend one-half around the eccentric; and to start, say, as from one extreme of the eccentric, as at *f*, and extend to the opposite extreme, as at *h*, the graduations diminishing in extent from one extreme to the intermediate point, and increasing from that point to the other extreme, according to the variation in extent required for movement to produce a given extent of variation in the movement of the pitman. This scale may be divided, say, into one hundred parts, as shown, which will indicate the full extent of adjustment. This adjustment being, say, one inch, the workman making the adjustment knows if he moves the eccentric one point he has changed the extreme throw one one-hundredth of an inch, and so on. He is therefore enabled to adjust his eccentric with the utmost precision, and without the usual trials, which consume a very great amount of time in making such adjustment. The eccentric disk is best adjusted by providing its periphery with gear-teeth and combining therewith a pinion, E, through which the eccentric may be conveniently turned, and this adjustment can be readily made while the machine is in operation, affording great advantage to the workman, as the pitman many times requires adjustment in the work. To stop the machine for such adjustment consumes a great amount of time, because of the trials necessary, whereas by the employment of the graduated scale and the pointer he may make the adjustment while the machine is in operation, and without any delays, waits, or trials.

It will be readily understood that the scale may be either on the eccentric or the pitman-

head, the scale being on the one and the pointer on the other. I prefer, however, to make it on the face of the eccentric as being more convenient to graduate than the pitman-head.

This invention is applicable to many machines in which a crank movement is employed to convert rotary into reciprocating motion. One illustration will be sufficient to show its application to general uses where such adjustment is necessary. Its use in a power-press enables the workman to adjust the descent of his tool while the machine is in operation, and with the utmost accuracy, or when introducing new or different tools, as punches and dies, such adjustment is necessary in order to bring the punches and dies in proper working condition, and the adjustment is greatly facilitated by means of the graduated scale and pointer.

I have illustrated the eccentric disk as fixed in its position by splitting the end of the pitman and combining therewith a clamp-screw, F, which binds the two parts together on the periphery of the eccentric, to securely hold it in any position to which it may be adjusted. Loosening the screw F frees the eccentric, so that it may be turned.

I claim--

The combination of a pitman, the disk B, arranged in the head of the pitman, with an eccentric opening, C, therein to receive the crank-pin, the said disk made adjustable in the head of the pitman, the one provided with a pointer and the other with a scale graduated from one extreme throw of the eccentric to the opposite extreme, said graduations diminishing from one extreme to the intermediate point, and increasing from that intermediate point to the other extreme, according to the throw of the crank, substantially as described.

NORMAN C. STILES.

Witnesses:

HARRIS WARNER,  
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